Product Stewardship Summary

Dipropyleneglycol diacrylate

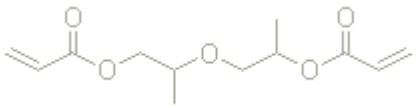
General Statement

Dipropyleneglycol diacrylate is a colorless liquid. It is a di-functional acrylate monomer that is known for its polymerization by free radicals. It is a reactive diluent for radically curable inks, coatings and adhesives. Dipropyleneglycol diacrylate is a low to moderate hazard material and the risk of adverse health effects associated with both occupational and consumer use of this chemical is anticipated to be low to moderate.

Ashland both purchases and produces this chemical. Exposure controls in the workplace serve to prevent adverse health effects to workers. Consumers are unlikely to come into contact with harmful levels of dipropyleneglycol diacrylate, as this monomer is anticipated to present only in trace quantities in consumer products.

Chemical Identity

Name: Dipropyleneglycol diacrylate
Brand Names: Not applicable
Chemical name (IUPAC): oxydipropane-1,2-diyl bisacrylate
CAS number(s): 57472-68-1
EC number: 260-754-3
Molecular formula: $C_{12}H_{18}O_5$
Structure:



Uses and Applications

Dipropyleneglycol diacrylate is designed for use as a reactive component in ultra-violet (UV) and electron beam (EB) curing applications. Dipropyleneglycol diacrylate is used in printing inks and varnishes, overprint varnishes, wood and industrial coatings, plastic coatings and paper and board varnishes.

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Physical/Chemical Properties

Phys/Chem Safety Assessment

Property	Value
Form	Colorless liquid
Physical state	Liquid
Color	Clear/Colorless
Odor	Ester-like
Density	1.049 g/cm3@ 20°C
Melting / boiling point	-86 / 104.5 °C
Flammability	No data available
Explosive properties	No data available
Self-ignition temperature	240°C
Vapor pressure	0.001 hPa @ 20°C
Mol weight	242.27 g/mol
Water solubility	5.2 g/L
Flash point	137°C
Octanol-water partition coefficient (Logkow)	0.01-0.39 @24°C

Exposure, Hazard and Safety Assessment

The following section describes possible exposures scenarios and hazards associated with dipropyleneglycol diacrylate. The exposure assessment describes both the amount of and the frequency with which a chemical substance reaches a person, a population of people, or the environment. Hazard refers to the inherent properties of a substance that make it capable of causing harm to human health or the environment. The safety assessment reports the possibility of a harmful event arising from exposure to a chemical or physical agent under specific conditions. Just because a substance may possess potentially harmful properties does not mean that it automatically poses a risk. It is not possible to make that determination without understanding the exposure.

Human Health Effects

Human Exposure Assessment

Consumer: Dipropyleneglycol diacrylate is an acrylic chemical in UV-cured inks, adhesives, sealants and coatings. It is used in coatings for furniture and flooring and industrial applications, as well as printing inks and overprint varnishes.
Consumer products are not anticipated to contain the unreacted monomer of dipropyleneglycol diacrylate, and therefore potential consumer exposures to this substance are anticipated to be negligible.

Worker: In industrial settings, dipropyleneglycol diacrylate is manufactured and handled in closed processes as much as possible, which ensures that worker exposure to dipropyleneglycol diacrylate is minimized. The proper use of personal protective equipment, such as during loading, unloading, sampling or maintenance operations, will further minimize potential worker exposures to dipropyleneglycol diacrylate.

Human Hazard Assessment

Dipropyleneglycol diacrylate does not present acute toxicity via oral, dermal or inhalational routes. Skin contact can result in moderate irritation. Dipropyleneglycol diacrylate is associated with irreversible eye damage if it comes in contact with eyes. Dipropyleneglycol diacrylate does not cause allergic skin reactions. Dipropyleneglycol diacrylate is neither mutagenic or genotoxic and is not associated with reproductive or developmental toxicity. Dipropyleneglycol diacrylate is not anticipated to cause cancers in humans.

Dipropyleneglycol diacrylate does not present an aspiration hazard.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	No acute toxicity if applied on skin, ingested or via inhalation
Irritation / corrosion Skin / eye / respiratory test	Skin contact causes moderate irritation. Eye contact causes serious damage to eyes. Inhalation is not anticipated to cause respiratory irritation.
Sensitization	May cause an allergic skin reaction upon contact with skin
Toxicity after repeated exposure Oral / inhalation / dermal	Not anticipated to cause damage to internal organs or systems through prolonged or repeated exposure to low doses
Genotoxicity / Mutagenicity	Does not affect genetic system
Carcinogenicity	Not considered as a carcinogen
Reproductive/Developmental Toxicity	Not anticipated to cause reproductive toxicity, nor damage to unborn children
Aspiration hazard	Not anticipated to cause aspiration toxicity if accidentally enter airways

Human Health Safety Assessment

Consumer: Dipropyleneglycol diacrylate is not used as a raw material in consumer product formulations. Therefore, no appreciable consumer exposures or associated health risks are anticipated.

Worker: In industrial settings, dipropyleneglycol diacrylate is manufactured and handled primarily in closed processes that limit exposure. Based on the implementation of good manufacturing processes and industrial hygiene practices, the occupational health risk associated with dipropyleneglycol diacrylate is anticipated to be low.

Environmental Effects

Environmental Exposures

Environmental exposure to dipropyleneglycol diacrylate is possible via the manufacturing process of this substance or when the substance is used into formulation in industrial settings – for example, while formulating the substance into mixtures for coatings, inks or adhesives. In professional settings, its widespread use leading to its inclusion into articles like inks also presents the potential for environmental exposure.

Environmental Hazard Assessment

If released into water, dipropyleneglycol diacrylate is not expected to adsorb to suspended solids or sediment. Dipropyleneglycol diacrylate is readily biodegradable and has a low potential for bioaccumulation. In air, dipropyleneglycol diacrylate will be degraded and, if released to soil, it is expected to have high mobility. Volatilization from moist soil surfaces is not expected to be an important fate process.

Effect Assessment	Result
Aquatic toxicity	Not harmful to aquatic life

Fate and behavior	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not bioaccumulative (log K_{ow} = 0.01 – 0.039)
PBT / vPvB conclusion	This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB)

Environmental Safety Assessment

Dipropyleneglycol diacrylate is not toxic to aquatic organisms. It is anticipated to present a low overall risk to aquatic environments. This conclusion is based on the fact that dipropyleneglycol diacrylate is readily biodegradable and not bioaccumulative, and thus will be quickly removed from the aquatic environment through degradation. Overall, this substance is not considered to be PBT or vPvB).

Risk Management Recommendations

Exposure to dipropyleneglycol diacrylate in the workplace can be controlled by sufficient ventilation, proper handling and storage techniques, and the use of appropriate personal protective equipment as recommended in the SDS for this substance. Consumer products are not anticipated to contribute to appreciable exposures to dipropyleneglycol diacrylate.

A selection of occupational exposure limits is below.

- No existing occupational exposure limit values

Regulatory Agency Review

Dipropyleneglycol diacrylate is on the following lists:

- Taiwan Chemical Substance Inventory (TCSI)
- Australia Inventory of Chemical Substances (AICS)
- Canadian Domestic Substances List (DSL)
- China. Inventory of Existing Chemical Substances in China (IECSC)
- ECHA List of Publishable Substances Registered
- European Inventory of Existing Commercial Chemical Substances (EINECS)
- Japan. ENCS - Existing and New Chemical Substances Inventory
- Korea. Korean Existing Chemicals Inventory (KECI)
- New Zealand. Inventory of Chemical Substances
- United States TSCA Inventory
- Australia Inventory of Chemical Substances (AICS)
- Canadian Domestic Substances List (DSL)
- China. Inventory of Existing Chemical Substances in China (IECSC)
- United States TSCA Inventory
- Korea. Korean Existing Chemicals Inventory (KECI)
- United States TSCA Inventory
- China. Inventory of Existing Chemical Substances in China (IECSC)

Regulatory Information / Classification and Labeling

Under the Globally Harmonized System for classification and labeling (GHS), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (Extended) SDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use.

GHS Classification:

Skin irritation - Category 2
Serious eye damage - Category 1
Skin sensitization - Category 1

Hazard Statements:

H315: Causes skin irritation.
H318: Causes serious eye damage.
H317: May cause an allergic skin reaction.

Signal Word: Danger

Precautionary Statements:

P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P264: Wash skin thoroughly after handling.
P272: Contaminated work clothing must not be allowed out of the workplace.
P280: Wear eye protection/face protection/protective gloves.
P302: IF ON SKIN: Wash with plenty of soap and water.
P305: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/ physician
P333: If skin irritation or rash occurs: Get medical advice/ attention.
P362: Take off contaminated clothing and wash before reuse.
P501: Dispose of contents/container to an approved waste disposal plant

Hazard Pictograms:

Conclusion

Dipropyleneglycol diacrylate is an UV-cured acrylic chemical used in coatings for furniture and flooring and industrial applications, as well as in printing inks and overprint varnishes. Consumer products will not contain appreciable levels of dipropyleneglycol diacrylate, and therefore exposure and health risks to consumers are considered to be negligible. In the occupational setting, responsible handling of dipropyleneglycol diacrylate will prevent the potential for skin or eye irritation and skin sensitization, allowing workers to use materials containing dipropyleneglycol diacrylate safely.

Contact Information with Company

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Additional Information

For more information on GHS, visit http://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf or http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.
Ashland product stewardship summaries are located at http://www.ashland.com/sustainability/product/product-stewardship

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REACH registration is specific to Importers/Manufacturers that place the chemical on the EU market, and is specific to registered uses. Inclusion on the list of REACH Registered Substances does not automatically imply registration by Ashland.

Inclusion on the New Zealand Inventory of Chemicals applies only to the pure substance listed. The importer of record must determine whether or not their substances are in compliance.